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EXAMINER	
RAMIREZ, DELIA M	
ART UNIT	PAPER NUMBER
1652	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	02/12/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/507,132	KAKU ET AL.	
	Examiner	Art Unit	
	Delia M. Ramirez	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/17/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) *4 and 7-9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6,10 and 11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/10/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

Claims 1-11 are pending.

Applicant's election with traverse of Group I, claims 1-3, 5-6, 10-11 drawn to a gene encoding a scytalone dehydratase, vectors, host cells, and a kit comprising fragments of said gene, as submitted in a communication filed on 11/17/2006 is acknowledged.

Applicant's traverse is on the grounds that (1) the cited references are shown as "A" references in the International Search Report, (2) the Examiner's findings are in contrast to the IPER where it is indicated that the claims are novel with regard to the references cited by the Examiner, and (3) should the PCT rules be cited and applied, then the IPER results and findings by the International Bureau should also be followed.

Applicant's arguments have been fully considered but are not deemed persuasive to withdraw the restriction requirement. The Examiner acknowledges the findings of the International Bureau. However, it is noted that according to 37 CFR 1.499, if the Examiner finds that a national stage application lacks unity of invention under 37 CFR § 1.475, the examiner may in an Office action require the applicant in the response to that action to elect the invention to which the claims shall be restricted. Such requirement may be made before any action on the merits but may be made at any time before the final action at the discretion of the Examiner. Claim 1 as interpreted is directed in part to a gene encoding any scytalone dehydratase in view of the fact that claim 1 is directed to a gene encoding a variant of the polypeptide of SEQ ID NO: 2 having any number of substitutions/additions/deletions and having scytalone dehydratase activity in the presence of an inhibitor. See Claim Rejections under 35 USC 112, second paragraph, for claim interpretation. Thus, claim 4 is directed in part to any scytalone dehydratase which is active in the presence of an inhibitor. As previously indicated in the restriction requirement, the technical feature linking Groups I-III is a scytalone dehydratase. This technical feature is taught by Nakasako et al. and

Motoyama et al. since they teach a *P. oryzae* scytalone dehydratase which is partially active in the presence of carpropamid as taught by Nakasako et al. See Claim Rejections under 35 USC 102 for a detailed discussion of the teachings of these references. Thus, according to PCT Rule 13.2, the claimed inventions do not meet the requirement of unity of invention under PCT Rule 13.2.

The requirement is deemed proper and therefore is made FINAL.

Claims 4, 7-9 are withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Claims 1-3, 5-6, 10-11 are at issue and are being examined herein.

Specification

1. The preliminary amendment to the specification filed on 6/13/2005, which add sequence identifiers throughout the text of the specification, is acknowledged.

2. The abstract of the specification is objected to for not complying with the required language and/or format. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details. The language should be clear and concise and should not repeat information given in the title. Appropriate correction is required.

Priority

3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. 119(a)-(d) to JAPAN 2002-66955 filed on 03/12/2002. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

4. This application is the US National Stage of PCT/JP03/01980 filed on 02/24/2003.

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on 9/10/2004 is acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

6. The drawings submitted on 9/10/2004 have been reviewed and are accepted by the Examiner for examination purposes.

Claim Objections

7. Claim 2 is objected to due to the recitation of "inhibits dehydration reaction". It should be amended to recite "inhibits the dehydration reaction". Appropriate correction is required.

Claim Rejections - 35 USC § 112, Second Paragraph

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-3, 5-6, 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 1 is indefinite in the recitation of "protein consisting of an amino acid sequence shown in SEQ ID NO: 2 by deletion, substitution, or addition of one or more amino acids" for the following reasons. The term is unclear as one cannot determine the meaning of the term "protein consisting of...by deletion....". If the term is intended to encompass solely a protein consisting of SEQ ID NO: 2, then the

proteins of (a) and (b) would be identical. It appears that the intended meaning of the term is "protein consisting of an amino acid sequence, wherein said amino acid sequence is obtained by deletion, substitution or addition of one or more amino acids in SEQ ID NO: 2, wherein said protein has scytalone dehydratase activity". For examination purposes, this interpretation will be used. Correction is required.

11. Claim 6 is indefinite in the recitation of "a transformant obtained by transformation of the recombinant vector of claim 5" for the following reasons. As known in the art, host cells are transformed with recombinant vectors. Thus, it is unclear how a vector can be transformed. For examination purposes, it will be assumed that the claim reads "a transformant obtained by transformation with the recombinant vector of claim 5". Correction is required.

12. Claim 10 is indefinite in the recitation of "a kit for assessing a rice blast fungus resistant to a scytalone dehydratase inhibitor comprising a pair of primers designed to flank a nucleotide sequence coding for an amino acid corresponding to valine at position 75 in the amino acid shown in SEQ ID NO: 4" as it is unclear as to how SEQ ID NO: 4 is related to the primers required in the kit. As written, the nucleotide sequence is required to encode a single amino acid, i.e., valine. Thus, any reference to where that amino acid can be found is meaningless because there is no indication as to how SEQ ID NO: 4 relates to the area to be flanked by the primers. In addition, while the preamble indicates that the kit is to be used for assessing a rice blast fungus resistant to a scytalone dehydratase inhibitor, it is unclear as to how the inhibitor can be assessed with the primers required in the kit. For examination purposes, it will be assumed that the claim is directed to a kit comprising a pair of primers. Correction is required.

13. Claim 11 is indefinite in the recitation of "a kit....comprising an oligonucleotide including a nucleotide sequence coding for an amino acid corresponding to valine at position 75 in the amino acid sequence shown in SEQ ID NO: 4" as it is unclear as to how SEQ ID NO: 4 is related to the oligonucleotide required in the kit. As written, the oligonucleotide appears to comprise a nucleotide sequence encoding a single amino acid, i.e., valine. Thus, one cannot determine how the location of

valine in SEQ ID NO: 4 further limits the structure of the oligonucleotide required by the claim. Also, as indicated above with regard to claim 10, while the preamble of the claim indicates that the kit is to be used for assessing a rice blast fungus resistant to a scytalone dehydratase, it is unclear as to how this assessment can take place with the oligonucleotide. For examination purposes, it will be assumed that the claim is directed to a kit which comprises an oligonucleotide, wherein said oligonucleotide comprises a nucleotide sequence which encodes a valine residue. Correction is required.

Claim Rejections - 35 USC § 101

14. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

15. Claims 1-3 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-3, as written, do not sufficiently distinguish over nucleic acids as they exist naturally because the claim(s) does not particularly point out any non-naturally occurring differences between the claimed products and the naturally occurring products. In the absence of the hand of man, the naturally occurring products are considered non-statutory subject matter. See *Diamond v. Chakrabarty*, 447 U.S. 303, 206 USPQ 193 (1980). The claim(s) should be amended to indicate the hand of the inventor, e.g., by insertion of "isolated" or "purified" as taught by Example 2, pages 21-25 of the specification. See MPEP 2105.

Claim Rejections - 35 USC § 112, First Paragraph

16. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or

with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

17. Claims 1-3, 5-6, 10-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-2 are directed in part to a genus of nucleic acids encoding any scytalone dehydratase wherein said scytalone dehydratase is active in the presence of a scytalone dehydratase inhibitor. Claim 3 is directed to the genus of nucleic acids of claim 1 with the added limitation that the inhibitor is carpropamid. Claims 5-6 are directed to (1) a genus of vectors comprising the genus of nucleic acids of claim 1, and (2) a genus of transformants comprising the genus of vectors. Claims 10-11 are directed to kits comprising a genus of primers having any structure and a genus of oligonucleotides encoding a valine residue. See Claim Rejections under 35 USC 112, second paragraph, for claim interpretation.

In *University of California v. Eli Lilly & Co.*, 43 USPQ2d 1938, the Court of Appeals for the Federal Circuit has held that "A written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials". As indicated in MPEP § 2163, the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show that Applicant was in possession of the claimed genus. In addition, MPEP § 2163 states that a representative number of species means that the species which are adequately described are

representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus.

There is essentially no structural limitation with regard to the members of the genus of nucleic acids recited. While the specification in the instant application discloses the structure of a single species of the genus of nucleic acids encoding a scytalone dehydratase (SEQ ID NO: 1) recited and a single species of the genus of scytalone dehydratases which is resistant to carpropamid (SEQ ID NO: 2), it provides no information as to the structural elements required in any nucleic acid encoding a protein having scytalone dehydratase activity, nor does it teach which structural elements within the polypeptide of SEQ ID NO: 2 are required in any scytalone dehydratase that is resistant to carpropamid or any other inhibitor. In addition, while the specification discloses primers consisting of fragments of the polynucleotide of SEQ ID NO: 1, the specification fails to disclose the structure of all the primers and oligonucleotides encompassed by the claims.

The claims encompass an extremely large genus of nucleic acids which are structurally unrelated. A sufficient written description of a genus of nucleic acids may be achieved by a recitation of a representative number of nucleic acids defined by their nucleotide sequence or a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus. However, in the instant case, there is no structural feature which is representative of all the members of the genus of nucleic acids recited in the claims. Furthermore, while one could argue that SEQ ID NO: 1 is representative of the structure of all the members of the genus of nucleic acids recited, it is noted that the art teaches several examples of how even small structural variability can have a significant effect on function. For example, Witkowski et al. (Biochemistry 38:11643-11650, 1999) teach that one conservative amino acid substitution transforms a β-ketoacyl synthase into a malonyl decarboxylase and completely eliminates β-ketoacyl synthase activity. Seffernick et al. (J. Bacteriol. 183(8):2405-2410, 2001) teach that two naturally occurring *Pseudomonas* enzymes having 98% amino acid sequence

identity catalyze two different reactions: deamination and dehalogenation, therefore having different function. Therefore, since minor structural changes may result in changes affecting function, and no additional information correlating structure with scytalone dehydratase activity has been provided, one cannot reasonably conclude that the structures disclosed are representative of all the nucleic acids recited in the claims.

Due to the fact that the specification only discloses a single species of the genus of scytalone dehydratases encoded by the claimed genus of nucleic acids (i.e., SEQ ID NO: 2), as well as the lack of description of any additional species by any relevant, identifying characteristics or properties, one of skill in the art would not recognize from the disclosure that Applicant was in possession of the claimed invention.

18. Claims 1-3, 5-6, 10-11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a nucleic acid encoding the polypeptide of SEQ ID NO: 2, vectors and isolated host cells comprising said nucleic acids, does not reasonably provide enablement for (1) any gene encoding any scytalone dehydratase, wherein said scytalone dehydratase is active in the presence of a scytalone dehydratase inhibitor, or in the presence of carpropamid, (2) any vector or transformant comprising the gene of (1), (3) kits comprising primers having any structure, (4) kits comprising any oligonucleotide encoding a valine residue, or (5) any non-isolated host cell or transgenic multicellular organism comprising a nucleic acid encoding the polypeptide of SEQ ID NO: 2. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required are summarized in *In re Wands* (858 F.2d 731, 737, 8 USPQ2nd 1400 (Fed. Cir. 1988)) as follows: (1) quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence

and absence of working examples, (4) the nature of the invention, (5) the state of prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breath of the claims. The factors which have lead the Examiner to conclude that the specification fails to teach how to make and/or use the claimed invention without undue experimentation, are addressed in detail below.

The breath of the claims. Claims 1-3, 5-6 and 10-11 are so broad as to encompass (1) a nucleic acid encoding any scytalone dehydratase, wherein said scytalone dehydratase is active in the presence of a scytalone dehydratase inhibitor, or in the presence of carpropamid, (2) any vector or transformant comprising the nucleic acid of (1), (3) kits comprising primers having any structure, (4) kits comprising any oligonucleotide encoding a valine residue, or (5) any transformant comprising a nucleic acid encoding the polypeptide of SEQ ID NO: 2. See Claim Rejections under 35 USC 112, second paragraph, for claim interpretation. The enablement provided is not commensurate in scope with the claims due to the extremely large number of nucleic acids of unknown structure recited in the claims. In the instant case, the specification enables a nucleic acid encoding the polypeptide of SEQ ID NO: 2 and vectors comprising said nucleic acids.

With regard to claim 6, it is noted that the term "transformant" is not limited to isolated host cells but it also encompasses transgenic multicellular organisms. Thus, in its broadest reasonable interpretation, claim 6 is directed to a genus of transgenic multicellular organisms comprising a genus of nucleic acids encoding any scytalone dehydratase. The enablement provided is not commensurate in scope with the claim due to the extremely large number of transgenic multicellular organisms comprising the recited nucleic acids encompassed by the claims which the specification fails to teach how to generate or how to use. In the instant case, the specification enables an isolated host cell comprising a vector comprising the polynucleotide of SEQ ID NO: 1.

The amount of direction or guidance presented and the existence of working examples. The specification discloses the amino acid sequence of SEQ ID NO: 2 and the nucleotide sequence of SEQ

ID NO: 1 as working examples. However, the specification fails to provide any clue as to (1) the structural elements required in any nucleic acid encoding a protein having scytalone dehydratase activity, or (2) which are the structural elements in the protein disclosed which are essential for any protein to display scytalone dehydratase activity. No correlation between structure and scytalone dehydratase activity has been presented. There is no information or guidance as to which amino acid residues in the polypeptide of SEQ ID NO: 2 can be modified and which ones are to be conserved to create a variant displaying the same activity as that of the polypeptide of SEQ ID NO: 2. Similarly, there is no information or guidance as to which nucleotides in the polynucleotide of SEQ ID NO:1 can be modified and which ones are to be conserved to create a variant that encodes a scytalone dehydratase. The specification is also silent with regard to the structural elements required in any scytalone dehydratase such that it would not be inhibited by carpropamid or other inhibitors.

With regard to claim 6, while the specification discloses that the polynucleotides of the invention can be used to transform host cells for recombinant production of the corresponding protein, there are no working examples or specific methods disclosed showing a transgenic multicellular organism capable of expressing the polynucleotide of SEQ ID NO: 1, or capable of producing the polypeptide of SEQ ID NO: 2.

The state of prior art, the relative skill of those in the art, and the predictability or unpredictability of the art. The nucleotide sequence of the coding region of a polynucleotide encoding a protein determines the structural and functional properties of that protein. In the instant case, neither the specification nor the art provide a correlation between structure and activity such that one of skill in the art can envision the structure of any nucleic acid encoding a polypeptide having the same biological function as that of the polypeptide of SEQ ID NO: 2. In addition, the art does not provide any teaching or guidance as to (1) which nucleotides within the polynucleotide of SEQ ID NO: 1 can be modified and which ones are conserved such that one of skill in the art can make variants as recited encoding

polypeptides with the same biological activity as that of the polypeptide of SEQ ID NO: 2, (2) which segments of the polypeptide of SEQ ID NO: 2 are essential for activity, (3) the general tolerance of scytalone dehydratases to structural modifications and the extent of such tolerance, (4) the structural elements required in any scytalone dehydratase such that it would not be inhibited by carpropamid or other inhibitors. The art clearly teaches that changes in a protein's amino acid sequence to obtain the desired activity without any guidance/knowledge as to which amino acids in a protein are required for that activity is highly unpredictable. At the time of the invention there was a high level of unpredictability associated with altering a polypeptide sequence with an expectation that the polypeptide will maintain the desired activity. For example, Branden et al. (Introduction to Protein Structure, Garland Publishing Inc., New York, page 247, 1991) teach that (1) protein engineers are frequently surprised by the range of effects caused by single mutations that they hoped would change only one specific and simple property in enzymes, (2) the often surprising results obtained by experiments where single mutations are made reveal how little is known about the rules of protein stability, and (3) the difficulties in designing *de novo* stable proteins with specific functions. The teachings of Branden et al. are further supported by the teachings of Witkowski et al. and Seffernick et al. already discussed above, where it is shown that even small amino acid changes result in enzymatic activity changes.

With regard to transgenic multicellular organisms, the prior art teaches that making genetically modified animals is highly unpredictable. The relevant art has for many years indicated that the unpredictability of generating transgenic animals lies with the site or sites of integration of the transgene into the target genome. Kappel et al. (Current Opinion in Biotechnology 3:548-553, 1992) teach that transgenic animals are known to have inherent cellular mechanisms which may alter the pattern of gene expression, such as DNA methylation or deletion from the genome (page 549, right column, third paragraph). Furthermore, Mullins et al. (Hypertension 22(4):630-633, 1993) teach that integration of a transgene in different species may result in widely different phenotypic responses (page 631, left column,

first paragraph, last sentence). Also, Mullins et al. (J. Clin. Invest. 97(7):1557-1560, 1996) teach that "the use of nonmurine species for transgenesis will continue to reflect the suitability of a particular species for the specific questions being addressed, bearing in mind that a given construct may react very differently from one species to another." (page 1559, Summary). Wigley et al. (Reprod. Fert. Dev. 6:585-588, 1994) indicate that transgenesis by microinjection has a number of limitations including random integration in the genome and integration of transgenes in multiple copies at one site such that expression level is not proportional to transgene copy number (page 585, Introduction). Cameron (Molecular Biotechnology 7:253-265, 1997) teaches that well-regulated expression of the transgene is not frequently achieved because of poor levels or the complete absence of expression or leaky expression in non-target tissues (page 256, left column, last three lines, right column, first three lines). According to Cameron, transgene expression with different transgenic lines produced with the same constructs is unpredictable and expression levels do not correlate with the number of transgene copies integrated, thus indicating the influence of the integration site on the expression pattern (page 256, right column, lines 3-13).

The quantity of experimentation required to practice the claimed invention based on the teachings of the specification. While methods of generating or isolating variants of a polynucleotide were known in the art at the time of the invention, it was not routine in the art to screen by a trial and error process for the extremely large number of polynucleotides encoding polypeptides having scytalone dehydratase activity encompassed by the claims. Furthermore, it is not routine in the art to isolate/create any polynucleotide encoding a protein having the activity recited without any knowledge as to the structural features which would correlate with that activity. In the absence of (1) a rational and predictable scheme for modifying any nucleotide in the nucleic acid of SEQ ID NO: 1 such that the resulting variant would encode a protein which retains scytalone dehydratase activity, and/or (2) a correlation between structure and scytalone dehydratase activity, one of skill in the art would have to test

an essentially infinite number of polynucleotides to determine which ones encode proteins having scytalone dehydratase activity.

While enablement is not precluded by the necessity for routine screening, if a large amount of screening is required, as is the case herein, the specification must provide a reasonable amount of guidance with respect to the direction in which the experimentation should proceed so that a reasonable number of species can be selected for testing. In view of the fact that such guidance has not been provided in the instant specification, it would require undue experimentation to enable the full scope of the claims. Furthermore, given the teachings of the art regarding the differences in expression of a transgene in different species, the limitations regarding the integration and expression of a transgene, and in view of the lack of guidance provided by the specification, it would have required undue experimentation to engineer any transgenic multicellular organism, or cells thereof, as claimed.

Therefore, taking into consideration the extremely broad scope of the claims, the lack of guidance, the amount of information provided, the lack of knowledge about a correlation between structure and function, the high degree of unpredictability of the prior art in regard to (a) structural changes and their effect on function, and (b) generation of transgenic multicellular organisms, one of ordinary skill in the art would have to go through the burden of undue experimentation in order to practice the claimed invention. Thus, Applicant has not provided sufficient guidance to enable one of ordinary skill in the art to make and use the invention in a manner reasonably correlated with the scope of the claims.

Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20. Claims 1-3, 5-6, 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Motoyama et al. (Biosci. Biotechnol. Biochem. 62(3):564-566, 1998; cited in the IDS) as evidenced by Nakasako et al. (Biochemistry 37:9931-9939, 1998; cited in the IDS).

Claims 1-3, 5-6 and 10-11 are directed in part to (1) a nucleic acid encoding any scytalone dehydratase, wherein said scytalone dehydratase is active in the presence of a scytalone dehydratase inhibitor, or in the presence of carpropamid, (2) any vector or transformant comprising the nucleic acid of (1), (3) kits comprising primers having any structure, and (4) kits comprising any oligonucleotide encoding a valine residue. See Claim Rejections under 35 USC 112, second paragraph, for claim interpretation. While claims 1-3, 5-6 require a nucleic acid encoding a protein having scytalone dehydratase activity in the presence of a scytalone dehydratase inhibitor or carpropamid, it is noted that the claims do not require a particular level of scytalone dehydratase activity in the presence of a scytalone dehydratase inhibitor. All that is required is some enzymatic activity present when exposed to the inhibitor.

Motoyama et al. teach a nucleic acid encoding a *P. oryzae* scytalone dehydratase (sdh1; Abstract). Motoyama et al. teach expression vectors and *E. coli* host cells transformed with such vectors (page 364, right column, last paragraph; T7 phage promoter based overexpression system). Motoyama et al. also teach primers (oligonucleotides) for PCR amplification of the cDNA encoding the *P. oryzae* scytalone dehydratase (page 364, right column, last paragraph, primers EX2 and EX3). A cursory review of EX2 shows that this primer/oligonucleotide encodes a Val residue. The partial peptide sequence encoded by EX2 corresponding to the first 12 nucleotides of EX2 (AAA-CCA-TGG-GTT) is Lys-Pro-Trp-Val. Thus, Motoyama et al. teach a kit for amplification of cDNA which comprises an oligonucleotide that encodes a Val residue. The *P. oryzae* scytalone dehydratase is partially active in the presence of carpropamid as evidenced by Nakasako et al. since they teach that carpropamid strongly

inhibits scytalone dehydratase activity. As such, carpropamid does not eliminate this enzymatic activity. Therefore, in view of the teachings of Motoyama et al. as evidenced by Nakasako et al., the nucleic acid, vectors, host cells and primers of Motoyama et al. anticipate the instant claims as written.

Allowable Subject Matter

21. A nucleic acid encoding the polypeptide of SEQ ID NO: 2, vectors and isolated host cells comprising said nucleic acid appear to be allowable over the prior art of record.

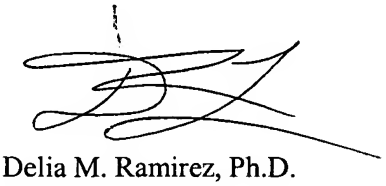
Conclusion

22. No claim is in condition for allowance.

23. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PMR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delia M. Ramirez whose telephone number is (571) 272-0938. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Ponnathapura Achutamurthy can be reached on (571) 272-0928. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.



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Art Unit 1652

DR
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